

## **REMARKS**

### **I. PRELIMINARY REMARKS**

Claims 1, 22, 25, 32, 44, 50, 59, 61-63 and 65 have been amended. Claims 2, 11-21, 23, 24, 38-43, 45, 46, 54-58, 60 and 64 have been canceled. No claims have been added. Claims 1, 3-10, 22, 25-37, 44, 47-53, 59, 61-63 and 65 remain in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

### **II. PRIOR ART REJECTIONS**

#### **A. The Rejections**

Claims 1, 3, 6, 7, 50-52, 54 and 57 have been rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,643,690 to Tateishi ("the Tateishi patent"). Claims 1-65 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the U.S. Patent Pub. No. 2001/0044043 to Badding ("the Badding publication"), U.S. Patent Pub. No. 2003/0188637 to Ito ("the Ito publication"), and U.S. Patent No. 6,027,575 to Paruchuri ("the Paruchuri patent").

As claims 2, 11-21, 23, 24, 38-43, 45, 46, 54-58, 60 and 64 have been canceled, applicant respectfully submits that the rejections thereof have been rendered moot. The rejections of the remaining claims under 35 U.S.C. §§ 102 and 103 are respectfully traversed with respect to the claims as amended above. Reconsideration thereof is respectfully requested.

#### **B. Discussion Concerning the Section 102 Rejection**

Independent claim 1 has been amended so as to include the limitations previously recited in now-canceled dependent claim 2. In view of the fact that now-canceled claim 2

was not rejected under 35 U.S.C. § 102, applicant respectfully submits that the rejection of claims 1, 3, 6, and 7 under 35 U.S.C. § 102 has been rendered moot.

Turning to claims 50-52, independent claim 50 calls for a method comprising the step of “forming a liquid metal electrical interconnect between a fuel cell that is located within a housing and at least one electrical conductor that extends outside the housing.” The combinations defined by claims 51 and 52 include, *inter alia*, the step recited in claim 50. The Tateishi patent fails to teach or suggest the claimed combinations. For example, the Office Action has taken the position that the Tateishi interconnector 8 corresponds to the claimed “electrical conductor.” Even assuming for the sake of argument that this is a reasonable interpretation of the claims, the interconnector 8 does not extend outside the housing. As such, the Tateishi patent fails to teach or suggest a step that involves an “electrical conductor that extends outside the housing.”

As the Tateishi patent fails to teach or suggest each and every aspect of the method recited in independent claim 50, applicant respectfully submits that claims 50-52 are patentable thereover and that the rejection of claims 50-52 under 35 U.S.C. § 102 should be withdrawn.

**C. Discussion Concerning the Section 103 Rejection of Claims 1, 3-10, 32-37 and 50-53**

Independent claims 1 and 32 call for respective combinations of elements including, *inter alia*, “a fuel cell located within [a] housing,” “at least one electrical conductor that **extends from the interior of the housing to the exterior** of the housing” and “at least one **liquid metal electrical interconnect** that electrically connects the fuel cell to the at least one electrical conductor.” Independent claim 50 calls for a method comprising the step of “forming a liquid metal electrical interconnect between a fuel cell that is located within a housing and at least one electrical conductor that extends outside the housing.” The combinations defined by claims 3-10 include, *inter alia*, the elements recited in claim 1, the combinations defined by claims 33-37 include, *inter alia*, the elements recited in claim 32, and the combinations defined by claims 51-53 include, *inter alia*, the step recited in claim 50.

The cited references fail to teach or suggest the claimed combinations. For example, the Badding publication discloses a solid oxide fuel cell within a housing 20. Fuel and air are supplied via ports 8a and 10a. Electrical leads 6a and 7a, which are connected to the fuel cell, extend through the housing 20. In contrast to the present inventions, however, the Badding publication fails to teach or suggest that at least one of the electrical leads 6a and 7a is connected to the fuel cell with a liquid metal interconnect.

The Office Action sought to remedy the deficiencies in the Badding publication with the teachings of the Ito publication and the Paruchuri patent. Applicant respectfully submits that they fail to do so. The Ito publication discloses various seals that are useful in high temperature applications. The Paruchuri patent is directed to a metallic adhesive that may be used to form electrical interconnects in relatively low temperature environments (i.e. temperatures up to about 125°C). Neither reference suggests that its teachings are applicable to the connection of a fuel cell to an electrical lead, such as one of the Bradding leads, that extends from the interior of a fuel cell housing to the exterior of the housing.

Accordingly, the combined teachings of the Badding publication, the Ito publication and the Paruchuri patent fail to establish a *prima facie* case of obviousness of the inventions defined by independent claims 1, 32 and 50. The rejection of claims 1, 3-10, 32-37 and 50-53 under 35 U.S.C. § 103 should, therefore, be withdrawn.

**D. Discussion Concerning the Section 103 Rejection of Claims 22, 25-31, 44, 47-49, 59, 61-63 and 65**

Independent claims 22 and 44 call for respective combinations of elements including, *inter alia*, “a housing assembly including at least one reactant chamber and ... a reactant tube,” “a fuel cell located within the housing assembly” and “at least one liquid metal electrical interconnect/seal that **electrically connects the fuel cell to the reactant tube and forms a seal** between the at least one reactant chamber and the reactant tube.” Independent claim 59 calls for method comprising the step of “forming a liquid metal electrical interconnect/seal that **electrically connects a fuel cell to a reactant tube and forms a seal** between at least one reactant chamber and the

reactant tube.” Independent claim 65 calls for a combination of elements including, *inter alia*, “**means for electrically connecting the fuel cell to the reactant tube and forming a seal** between the at least one reactant chamber and the reactant tube.” The combinations defined by claims 25-31 include, *inter alia*, the elements recited in claim 22, the combinations defined by claims 47-49 include, *inter alia*, the elements recited in claim 44, and the combinations defined by claims 61-63 include, *inter alia*, the step recited in claim 59.

The cited references fail to teach or suggest the claimed combinations. For example, the Badding publication discloses a solid oxide fuel cell within a housing 20. Fuel and air are supplied via ports 8a and 10a. Electrical leads 6a and 7a, which are connected to the fuel cell, extend through the housing 20. In clear contrast to the present inventions, the tubes defining the Badding ports 8a and 10a are not electrically connected to the fuel cell with a liquid metal interconnect/seal, or with anything else for that matter. Turning to the Ito publication and the Paruchuri patent, nothing in these references even remotely suggests electrically connecting a fuel cell to a reactant tube.

Accordingly, even assuming that there was some reason to combine their teachings, the Badding publication, the Ito publication and the Paruchuri patent fail to establish a *prima facie* case of obviousness with respect to independent claims 22, 44, 59 and 65. The rejection of claims 22, 25-31, 44, 47-49, 59, 61-63 and 65 under 35 U.S.C. § 103 should, therefore, be withdrawn.

### III. CLOSING REMARKS

In view of the foregoing, it is respectfully submitted that the claims in the application are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested. Allowance of the claims at an early date is courteously solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call applicant's undersigned

representative at (310) 563-1458 to discuss the steps necessary for placing the application in condition for allowance.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2025. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

Respectfully submitted,

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Date

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